

$HJKL$ is an isosceles trapezoid with bases \overline{HJ} and \overline{LK} , and median RS . Use the given information to solve each problem.

1. If $LK = 30$ and $HJ = 42$, find RS .

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2. If $RS = 17$ and $HJ = 14$, find LK .

$$\frac{14+x}{2} = 17$$

$$14+x=34 \quad x=20$$

3. If $RS = x + 5$ and $HJ + LK = 4x + 6$, find RS .

$$2 \cdot \frac{4x+6}{2} = x+5 \cdot 2$$

$$4x+6=2x+10$$

$$-2x \quad -2x$$

$$2x+6=10$$

$$-6 \quad -6$$

$$2x=4$$

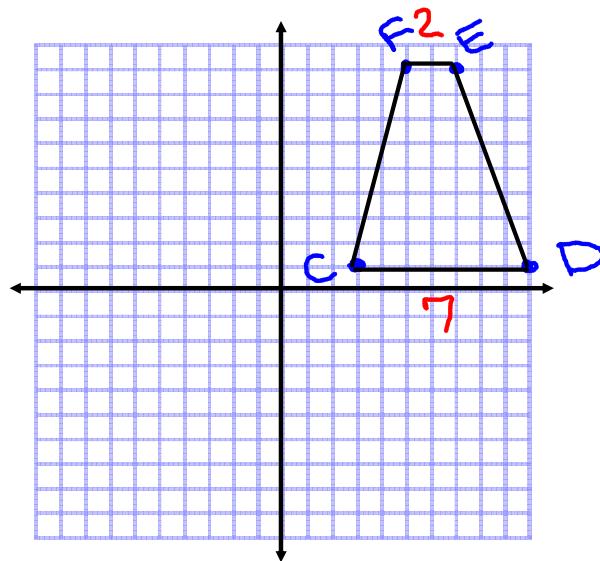
$$x=2$$

$$2+5=7=RS$$

4. If $m\angle LRS = 66$, find $m\angle KSR$.

66

5. Find the length of the median of a trapezoid with vertices at $C(3, 1)$, $D(10, 1)$, $E(7, 9)$, and $F(5, 9)$.



$$m=4.5$$

Trapezoids

MATH is an isosceles trapezoid with bases \overline{MA} and \overline{TH} . Use the given information to solve each problem.

1. If $MA = 34$ and $HT = 20$, find CD . **27**

2. If $HT = 17.6$ and $CD = 28.6$ find MA .

$$\begin{aligned} b_1 + 17.6 &= 57.2 \\ -17.6 &-17.6 \\ \hline b_1 &= 39.6 \end{aligned}$$

3. If $MA = 23.9$ and $CD = 16.4$, find HT .

$$\begin{aligned} b_1 + 23.9 &= 32.8 \\ -23.9 &-23.9 \\ \hline b_1 &= 8.9 \end{aligned}$$

4. If $CD = x + 12$ and $MA + HT = 4x + 3$, find x .

$$\begin{aligned} 4x + 3 &= 2x + 24 \\ -2x &-2x \\ \hline 2x + 3 &= 24 \\ -3 &-3 \\ \hline 2x &= 21 \\ x &= 10.5 \end{aligned}$$

5. If $m\angle TAM = 63$, find $m\angle HMA$.

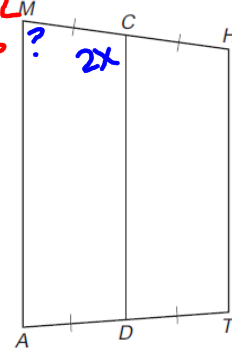
$$63$$

6. If $m\angle HCD = 52$, find $m\angle TDC$.

$$52$$

7. If $m\angle DCM = 2x$, find $m\angle CMA$ in terms of x .

$$\begin{aligned} ? + 2x &= 180 \\ -2x &-2x \\ \hline ? &= 180 - 2x \end{aligned}$$

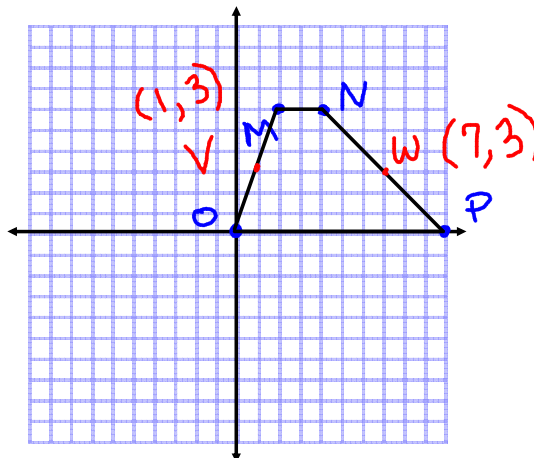


8. If the measure of the median of an isosceles trapezoid is 5.5, what are the possible integral measures for the bases?

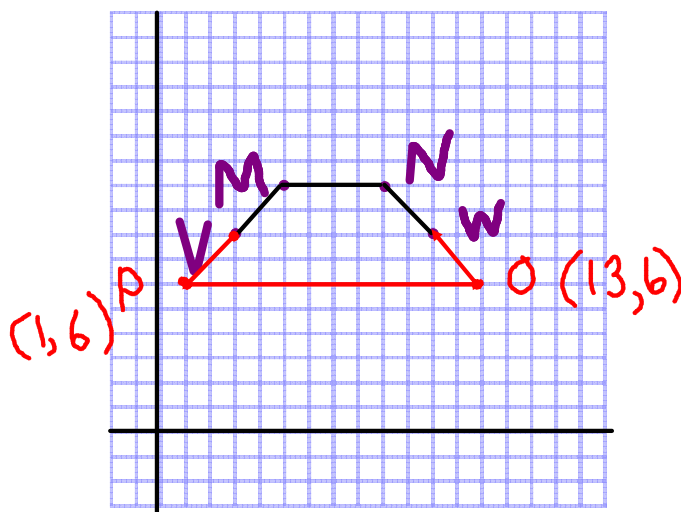
$$6, 5$$

$$1, 10$$

9. \overline{VW} is the median of a trapezoid that has bases \overline{MN} and \overline{PO} , with V on \overline{OM} and W on \overline{PN} . If the vertices of the trapezoid are $M(2, 6)$, $N(4, 6)$, $P(10, 0)$, and $O(0, 0)$, find the coordinates of V and W .

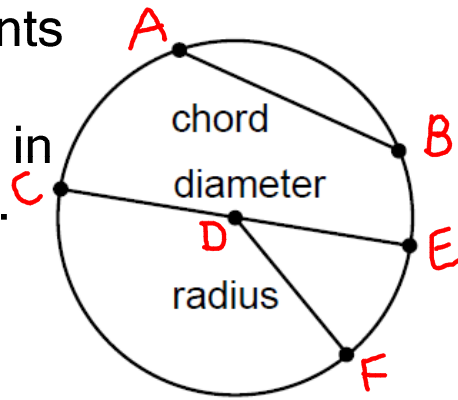


10. \overline{VW} is the median of a trapezoid that has bases \overline{MN} and \overline{PO} , with V on \overline{PM} and W on \overline{ON} . If four of the points are $M(5, 10)$, $N(9, 10)$, $V(3, 7)$, and $W(11, 7)$, find the coordinates of P and O .



Introduction to Circles

A **circle** is the set of all points in a plane that are a given distance from a given point in the plane called the **center**.



$$\text{diameter} = \text{radius} * 2$$
$$d=2r$$

The distance around a circle is called the **circumference**.

$$C = 2\pi r \text{ or } \pi d$$

$$\pi \approx 3.14$$